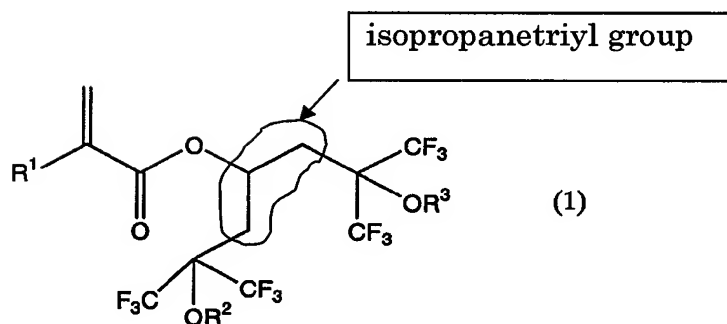


to show that the two products are not equivalent or interchangeable or to show that the intermediate loses its identity in the final product. To the contrary, under the specific circumstances of this case, in which it is apparent from the presence of the acrylate group in the product of claims 1-5 that the monomer claimed in claims 1-5 could be polymerized to produce polymers as claimed in claims 6-13, and in which there is no known use for the monomer product of claims 1-5 except to form the polymer products of claims 6-13, it is apparent that there is no proper basis for the restriction. As noted below, the monomers of claims 1-5 are novel and are not anticipated by any of the cited patents, US 6,105,618 to Komoriya et al.; US 7,094,850 to Miyazawa et al.; US 7,135,595 to Allen et al. or US 6,784,312 to Miyazawa et al. Therefore the claims all share the special technical feature of the claimed monomer, and unity of invention is clearly present. Accordingly, reconsideration and withdrawal of the restriction requirement and examination of all claims on the merits are respectfully requested.

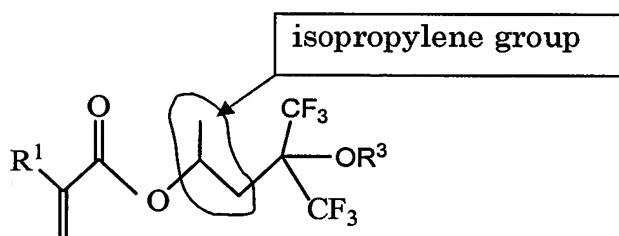
Rejection under 35 U.S.C. § 102(e)

The rejection of claims 1-5 under 35 U.S.C. §102(e) over Miyazawa et al., US 6,784,312; or over Miyazawa et al., US 7,094,850; or over Komoriya et al., US 7,105,618 is respectfully traversed.

Claim 1 of the present application relates to a polymerizable acrylate compound, which can be a novel monomer for producing a base resin used in the resist field. The polymerizable acrylate compound represented by general formula (1) is a monomer having two hexafluorocarinol groups (*i.e.*, $-\text{C}(\text{CF}_3)_2\text{OR}^2$ and $-\text{C}(\text{CF}_3)_2\text{OR}^3$) in the molecule and has the unexpected and surprising characteristic of having good copolymerizability with various monomers. In fact, general formula (1) has an isopropanetriyl group (*i.e.*, a trivalent group), as shown below.



In contrast, U.S. Patent No. 6,784,312 B2 ("Miyazawa") discloses isopropylene group (a bivalent group) as an example of R^2 in general formula (1) of Miyazawa (see column 3, lines 1-3), in which case, general formula (1) of Miyazawa will have the following formula:



As shown in the above formula, when R^2 in general formula (1) of Miyazawa is isopropylene group (or isopropanediyl group), the number of hexafluorocarbon groups ($-C(CF_3)_2OR^3$) is limited to one. Based on the specific examples represented by general formulas (2) to (5) of Miyazawa (see column 3, lines 7-36), n may be 1 or 2 in general formula (4) or (5) of Miyazawa, in which R^2 of general formula (1) of Miyazawa is a cyclic structure. This conforms to formulas (10) and (16) of Miyazawa (columns 11 and 15), in which n is 2 (that is, the number of hexafluorocarbon groups is two). In contrast, the number of hexafluorocarbon groups is limited to one in general formula (2) of Miyazawa, in which R^2 of formula (1) of Miyazawa is an ethylene group (*i.e.*, an acyclic group). This conforms to formula (8) of Miyazawa (column 10). In other words, general formula (1) of claim 1 of the present application is neither disclosed nor suggested by Miyazawa or U.S. Patent No. 7,094,850 B2, which is a divisional application of Miyazawa.

Further, formula (II) or (III) of U.S. Patent No. 7,135,595 B2 contains only one hexafluorocarbinol group, which is attached to an acyclic group (*i.e.*, *n*-propylene group in formula (II) and isobutylene group in formula (III)). (See Column 4).

Additionally, formula (10) of U.S. Patent No. 7,105,618 B2, which contains a right-side repeating unit (see column 12, lines 14-47), does not disclose general formula (1) of claim 1 of the present application, in which two hexafluorocarbinol groups are attached to an isopropanetriyl group.

Applicants note that in paragraph 7 on page 5 of the Office Action states , "R² can be isopropylene group... Therefore, the claimed isgpropanetridyl (sic "isopropanetriyl") group has been applied.". This conclusory analysis is both illogical and untenable. An isopropylene group, which is a bivalent group (an alkylene group), is clearly different from a isopropanetriyl group, which is a trivalent group. In actuality, the isopropanetriyl group of the general formula (1) of claim 1 is not disclosed or suggested at all by any of the cited references.

As mentioned above, the isopropylene group (see column 3, lines 2-3 of Miyazawa (US Patent 6,784,312)) is an alkylene group. The term "alkylene" has two definitions [see the attached definition of "alkylene" of Wiktionary (Exhibit A) and IUPAC GOLD BOOK (Exhibit B)].

According to the first definition given in Wiktionary, alkylene may be defined as being an alkene (e.g., propylene ($\text{CH}_3\text{CH}=\text{CH}_2$) corresponding to propene according to systematic name of IUPAC), which is an unsaturated, aliphatic hydrocarbon with one or more carbon-carbon double bonds. In this case, alkylene group may be defined as being an organic group that results from removal of one or more hydrogen atoms from a molecule of alkylene (e.g., propylene) having one or more carbon-carbon double bonds. This way of definition resembles the way of definition as to cyclobutene group (resulting from a molecule of cyclobutene), cyclohexane group (resulting from cyclohexane), norbornene group (resulting from norbornene) and adamantane group (resulting from adamantane) of cyclic groups (see column 3, lines 3-5 of Miyazawa (312)). It

is clear that the above-underlined alkylene group resulting from removal of, for example, three hydrogen atoms from an alkylene (alkene) is a trivalent group, but is different from isopropanetriyl group (a trivalent group) of the claimed invention, since the former contains one or more carbon-carbon double bonds, but the latter does not.

According to the second definition of Wiktionary, alkylene may be defined as being an alkanediyl functional group, especially one having the free valencies of adjacent carbon atoms (e.g., propylene ($\text{---CH}_2\text{CH}(\text{CH}_3\text{)---}$) corresponding to propane-1,2-diyl according to systematic name of IUPAC). It is clear that even this alkylene (i.e., an alkanediyl functional group) is different from an isopropanetriyl group (i.e., an alkanetriyl functional group) of the claimed invention, as explained above.

Thus, it should be apparent to a person skilled in the art that the isopropanetriyl group of general formula (1) of claim 1 is not disclosed nor suggested at all by any of the cited references. Due to the existence of this isopropanetriyl group, the polymerizable acrylate compound represented by general formula (1) is a monomer having two hexafluorocarinol groups (i.e., $\text{---C}(\text{CF}_3)_2\text{OR}^2$ and $\text{---C}(\text{CF}_3)_2\text{OR}^3$) in the molecule and thereby has the unique unexpected and surprising characteristic of having good copolymerizability with various monomers, as recited in claims 9-13. The claimed monomer is, therefore, both novel, and non-obvious, and reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt, favorable action thereon is earnestly solicited.

If there are any questions regarding this Reply or the application in general, a telephone call to the undersigned at (202) 624-2845 would be appreciated since this should expedite the examination of the application.

Application No. 10/563,961
Reply to Office Action
October 15, 2009

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038788.57306US).

Respectfully submitted,

October 15, 2009



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alkylene

Exhibit A

Definition from Wiktionary, a free dictionary

Contents

- 1 English
 - 1.1 Noun
 - 1.1.1 Usage notes
 - 1.1.2 See also

English

Noun

alkylene (*plural* alkylene)s)

1. (*obsolete, organic chemistry*) An alkene.
2. (*obsolete, organic chemistry*) An alkanediyl functional group, especially one having the free valencies of adjacent carbon atoms.

Usage notes

This is not obsolete in the functional group usage for chemical patent claims and descriptions; used along with alkenylene and alkynylene.

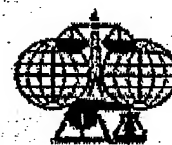
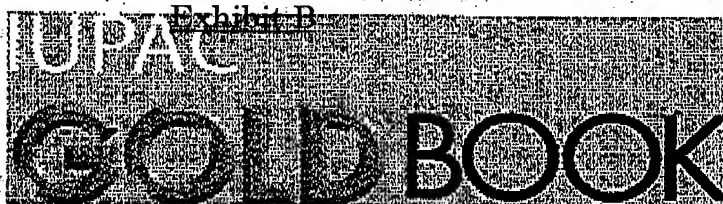
See also

- methylene
- ethylene
- propylene

Retrieved from "<http://en.wiktionary.org/wiki/alkylene>"

Categories: English nouns | Obsolete | Organic chemistry

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alkanetriyl

search

● structure search

● goldify

Indexes

● alphabetical

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● general

● source documents

● about

● sitemap

IUPAC > Gold Book > alphabetical index > A > **alkynes**

PREVIOUS

alkyl radicals

NEXT

alkylidene groups



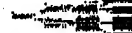
alkynes

1. An old term, which is not recommended, for alkenes, especially those of low molecular weight.
2. An old term for alkanediyl groups commonly but not necessarily having the free valencies on adjacent carbon atoms, e.g. $-\text{CH}(\text{CH}_3)\text{CH}_2-$ propylene (systematically called propane-1,2-diyl).

Source:

PAC, 1995, 67, 1307 (*Glossary of class names of organic compounds and reactivity intermediates based on structure (IUPAC Recommendations 1995)*) on page 1314

Interactive Link Maps

First Level	Second Level	Third Level
		

Cite as:

IUPAC. Compendium of Chemical Terminology, 2nd ed. (the "Gold Book"). Compiled by A. D. McNaught and A. Wilkinson. Blackwell Scientific Publications, Oxford (1997). XML on-line corrected version: <http://goldbook.iupac.org> (2006-) created by M. Nic, J. Jirat, B. Kosata; updates compiled by A. Jenkins. ISBN 0-9678550-9-8. doi:10.1351/goldbook.

Last update: 2009-09-07; version: 2.1.5.

DOI of this term: doi:10.1351/goldbook.A00227.

Original PDF version: <http://www.iupac.org/goldbook/A00227.pdf>. The PDF version is out of date and is provided for reference purposes only. For some entries, the PDF version may be unavailable.

Version for print | History of this term

